

What is claimed is:

1. A method for cleaning catalyst from a reactor vessel, comprising the steps of:
 suctioning the catalyst from the reactor vessel with a device without any humans
being within the reactor vessel; and
 moving the device within the reactor vessel.
2. The method according to claim 1, wherein said moving step includes articulating the
device.
4. The method according to claim 1, wherein said moving step includes rotating the
device.
5. The method according to claim 1, wherein said moving step includes moving the
device vertically within the reactor vessel.
6. The method according to claim 5, wherein said step of moving the device vertically
within the reactor vessel includes hoisting the device.
7. The method according to claim 1, further including videoing said suctioning of the
catalyst from the reactor vessel.
8. The method according to claim 7, further including lighting said suctioning of the
catalyst from the reactor vessel.
9. The method according to claim 1, further including controlling the device from a
station remote from the reactor vessel.

10. The method according to claim 1, further including stabilizing the device within the reactor vessel.

11. The method according to claim 10, wherein said step of stabilizing the device within the reactor vessel includes leveraging and wedging the device.

12. The method according to claim 1, further including a step selected from the group of steps consisting of: scraping an agglomerated material, providing a carrier medium for the catalyst, chemical spraying of the reactor vessel, picking, raking, augering, and removing bolts from within the reactor vessel.

13. The method according to claim 1, further including a step selected from the group of steps consisting of:

powering the device with a system selected from the group of systems consisting of powering the device with a low voltage electric system, powering the device with a high voltage electric system, powering the device with a hydraulic system, powering the device with a pneumatic system, and powering the device with a combination thereof.

14. A method for performing inert, hazardous environment, and confined space services, comprising the steps of:

performing a step selected from the group of steps consisting of: cleaning a waste material, and inspecting by video;

wherein said step is performed within a structure selected from the group of structures consisting of: a vessel, a tank, a tower, and a hold; and

moving a device for carrying out the performing step within the structure.

15. An apparatus for cleaning catalyst from a reactor vessel, comprising:

a robotic device having a cleaning arm connected to said robotic device.

16. The apparatus according to claim 15, wherein said robotic device has a main body, a turret connected to the main body, and wherein said cleaning arm is connected to said turret.
17. The apparatus according to claim 16, further including a vacuum line connected through the reactor vessel and through said robotic device to said cleaning arm.
18. The apparatus according to claim 15, further including a remote control station in communication with said robotic device.
19. The apparatus according to claim 15, further including an auger device connected to an end of said cleaning arm.
20. The apparatus according to claim 15, wherein said cleaning arm includes an articulatable frame assembly and a suction line mounted to said articulatable frame assembly.
21. The apparatus according to claim 20, further including a fitting connected to said suction line; and
a nozzle connected through the fitting.
22. The apparatus according to claim 15, further including an inspection camera mounted on said cleaning arm.
23. The apparatus according to claim 15, further including an attachment to an end of said cleaning arm wherein the attachment includes a means for removing agglomerated material from the reactor vessel.

24. An apparatus for performing inert, hazardous environment, and confined space services, comprising:

a robotic device having an articulatable frame assembly connected to said robotic device;

and

an inspection camera mounted on said articulatable frame assembly.

25. An apparatus for cleaning catalyst from a reactor vessel, comprising:

a robotic device having:

a means for stabilizing said robotic device within the reactor vessel;

a means for moving said robotic device within the reactor vessel;

a means for suctioning catalyst connected via said robotic device and through the reactor vessel.